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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/636,024	08/07/2003	Pierre Caron	50898/DBP/N75	1025

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/636,024

Applicant(s)

CARON ET AL.

Examiner

Harry D. Wilkins, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-2 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/008,745.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/7/03.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross et al (GB 2,234,521 and JP 05-059473).

Ross et al teach (see page 8, lines 1-6) a single-crystal Ni-based alloy that has a composition containing:

	Claimed	Ross et al	Comparison
Co	4.75-5.25 wt%	5-15 wt%	Overlap at 5-5.25 wt%
Cr	11.5-12.5 wt%	7-12 wt%	Overlap at 11.5-12 wt%
Mo	0.8-1.2 wt%	0.5-5 wt%	Broader Prior Art
W	3.75-4.25 wt%	3-12 wt%	Broader Prior Art
Al	3.75-4.25 wt%	3-5 wt%	Broader Prior Art
Ti	4-4.8 wt%	2-5 wt%	Broader Prior Art
Ta	1.75-2.25 wt%	2-6 wt%	Overlap at 2-2.25 wt%
C	0.006-0.04 wt%	0.03-0.25 wt%	Overlaps at 0.03-0.04 wt%
B	<0.01 wt%	0.002-0.05 wt%	Overlaps at 0.002-0.01 wt%
Zr	<0.01 wt%	None	Within present range
Hf	<1 wt%	0-2.0 wt%	Overlap at 0-1 wt%
Nb	<1 wt%	0-2.0 wt%	Overlap at 0-1 wt%
Ni	Balance	Balance	Same

The ranges of Co, Cr, Ta, C, B, Zr, Hf and Nb overlap the presently claimed ranges. See MPEP 2144.05 I. The ranges of Mo, W, Al and Ti are broader than the presently claimed ranges. However, it would have been within the expected skill of a routineer in the art to have optimized the contents of Mo, W, Al and Ti for the best

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gamma prime strengthening, (for support see Wukusick et al at col 6, lines 9-51 and col 7, lines 49-62). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II.

Regarding claim 2, Ross et al teach (see page 1, lines 5-9) that the alloy was applicable as turbine blades in aircraft gas turbine engines. However, similarities exist between the needs of alloys for aircraft turbine blades and industrial turbine blades. Therefore, one of ordinary skill in the art would have considered it obvious to have used the alloy of Ross et al in an industrial turbine because the alloy has improved tolerance to low angle grain boundaries and improved cyclic oxidation and hot corrosion resistance.

3. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al (US 5,154,884 and EP 0 076 360).

Wukusick et al teach (see abstract and Table 1, in col 9) a single crystal Ni-based alloy turbine blade that has a composition containing:

	Claimed	Wukusick et al	Comparison
Co	4.75-5.25 wt%	5-15 wt%	Overlap at 5-5.25 wt%
Cr	11.5-12.5 wt%	7-12 wt%	Overlap at 11.5-12 wt%
Mo	0.8-1.2 wt%	1-5 wt%	Overlap at 1-1.2 wt%
W	3.75-4.25 wt%	3-12 wt%	Broader Prior Art
Al	3.75-4.25 wt%	3-5 wt%	Broader Prior Art
Ti	4-4.8 wt%	3-5 wt%	Broader Prior Art
Ta	1.75-2.25 wt%	2-6 wt%	Overlap at 2-2.25 wt%
C	0.006-0.04 wt%	Impurity*	Within present range
B	<0.01 wt%	Impurity*	Within present range
Zr	<0.01 wt%	Impurity*	Within present range
Hf	<1 wt%	0-2 wt%	Overlap at 0-1 wt%
Nb	<1 wt%	0-2 wt%	Overlap at 0-1 wt%
Ni	balance	Balance	Same

*-See col 5, lines 50-58. When C is not an impurity it is at 0.05 and 0.06 wt%, therefore, the amount of C that is an impurity is below this level, i.e.-within the range of 0.006-0.04 wt%. When B is not an impurity it is at 0.009 and 0.002 wt%, therefore, the amount of C that is an impurity is below this level, i.e.-within the range of less than or equal to 0.01 wt%. Wukusick et al fails to teach any Zr being present, thus it teaches containing zero Zr, which is within the claimed range.

The ranges of Co, Cr, Mo, Ta, C, B, Zr, Hf and Nb overlap the presently claimed ranges. See MPEP 2144.05 I. The ranges of W, Al and Ti are broader than the presently claimed ranges. However, it would have been within the expected skill of a routineer in the art to have optimized the contents of W, Al and Ti within the broad ranges in order to have achieved proper gamma prime strengthening (for support see col 6, lines 9-51). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II. Regarding the possible presence of other alloying elements (Re, V) in the alloy of Wukusick et al, the present claim recites a composition "characterized" by several elements. "Characterized" is

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treated as open claim language, similar to “comprising”, and thus allows for the presence of other elements, even in major amounts.

Regarding claim 2, though Wukusick et al only teach (see abstract) using the alloy as blades in gas turbine engines, and do not teach any preference as to whether it was aircraft engines or industrial engines, it would have been obvious to one of ordinary skill in the art to have applied the alloy to either application. Therefore, Wukusick et al teach a single-crystal industrial turbine blade with the composition as described above.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al (US 5,395,584).

Berger et al teach (see col 3, lines 27-40) a Ni-based alloy that has a composition containing:

	Claimed	Berger et al	Comparison
Co	4.75-5.25 wt%	3-7.5 wt%	Broader Prior Art
Cr	11.5-12.5 wt%	6-17 wt%	Broader Prior Art
Mo	0.8-1.2 wt%	0.5-7 wt%	Broader Prior Art
W	3.75-4.25 wt%	1.5-8.5 wt%	Broader Prior Art
Al	3.75-4.25 wt%	2.5-9.5 wt%	Broader Prior Art
Ti	4-4.8 wt%	0.5-6.0 wt%	Broader Prior Art
Ta	1.75-2.25 wt%	0.5-4.0 wt%	Broader Prior Art
C	0.006-0.04 wt%	0-0.010 wt%	Overlaps at 0.006-0.010 wt%
B	<0.01 wt%	0-0.04 wt%	Overlaps at 0-0.01 wt%
Zr	<0.01 wt%	0-0.002 wt%	Within present range
Hf	<1 wt%	0.02-3.5 wt%	Overlap at 0.02-1 wt%
Nb	<1 wt%	0.01-2.5 wt%	Overlap at 0.01-1 wt%
Ni	balance	Balance	Same

The ranges of C, B, Zr, Hf and Nb overlap the presently claimed ranges. See MPEP 2144.05 I. The ranges of Co, Cr, Mo, W, Al, Ti and Ta are broader than the presently claimed ranges. However, it would have been within the expected skill of a routineer in the art to have optimized the contents of Co for increased operating

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temperature and improved castability, Cr and Al for good oxidation and hot corrosion resistance, Al, Ti, Ta, Mo and W for gamma prime strengthening, (for support see Wukusick et al at col 5, line 59 to col 7, line 62). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II. Regarding the presence of other alloying elements (Si, Yb, Re) in the alloy of Berger et al, the present claim recites a composition "characterized" by several elements. "Characterized" is treated as open claim language, similar to "comprising", and thus allows for the presence of other elements, even in major amounts. Regarding the limitation that the superalloy is "suitable for monocrystalline solidification", though Berger et al fails to teach that the alloy has such a property, it was known in the prior art that similar alloys (see Ross et al and Wukusick et al) were made by monocrystalline solidification. Therefore, one of ordinary skill in the art would have expected that the alloy of Berger et al would have this property as claimed.

Conclusion

5. This is a continuation of applicant's earlier Application No. 10/008,745. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL**

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even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

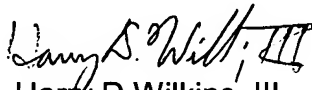
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Harry D Wilkins, III
Examiner
Art Unit 1742

hdw


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